City of Rochester
2002 Water Quality Report

127 Years of Pure and Wholesome Drinking Water

Rochester Water & Lighting Bureau
10 Felix St., Rochester, N.Y. 14608
Public Water Supply ID # NY2704518

Dear Water Customer:

The City of Rochester's Bureau of Water and Lighting remains committed to exceeding your expectations both in the quality of the water and in the level of service that we provide to you. Keeping you informed is a key component of this effort.

Drinking water is a resource that many of us take for granted. The availability of safe drinking water wherever we may travel in this great land is the result of the many years of service and dedication from drinking water professionals. We are proud of our dedication to providing you with safe, wholesome and good tasting water. As challenges arise to confront our industry, be assured that we will make every effort to meet them efficiently and effectively.

Here are a few highlights of 2002:

- *The federal standard for turbidity (clarity) of filtered water was strengthened and the water supplied to City customers easily met the stricter standard.*
- *We continued to add security enhancements at our reservoirs and at the Hemlock Lake Filtration Plant.*
- *The City received a $100,000 grant from the Environmental Protection Agency to fund a water system vulnerability study.*
- *We maintained the exclusive Director's Award status in the* ***USEPA Partnership For Safe Water*** *program by continuing to operate our water plant to the highest industry standards.*

Your feedback is always valuable to us. If you have any questions or comments, please give us a call at 428-6680.

Sincerely,

Donald Navor
Director of Water and Lighting

Questions and Answers About Your Water

Where does my water come from?

Since 1876, most Rochesterians have relied upon the watershed system located in and around Hemlock and Canadice Lakes for their drinking water supply. These lakes lie in the hills of Livingston and Ontario counties, about 30 miles south of Rochester.

The City of Rochester owns a large portion of this watershed, including the lakes and their surrounding shorelines. A number of City initiatives protect the lakes from potential sources of contamination in the watershed.

The City supplements its water supply to some City customers with Lake Ontario water purchased from the Monroe County Water Authority (MCWA). This water is treated at the MCWA's Shoremont Treatment Plant on Dewey Ave.

How is my water treated?

The Hemlock Filtration Plant and the Shoremont Treatment Plant use a three-step treatment process. First, chemicals called coagulants (primarily aluminum sulfate compounds) are added to untreated water, causing algae, bacteria and silt in the water to clump together into larger particles called floc. The floc particles are then filtered out by passing the water through layered beds of sand and ground-up anthracite coal. (Granular activated carbon is used at the Shoremont plant.) Finally, chlorine is carefully added to kill harmful microorganisms (disinfection). Fluoride is also added to help prevent tooth decay. Both sources of water are seasonally adjusted for pH.

In 2002, the drinking water from both the Hemlock and Shoremont treatment plants continued to be of considerably higher quality than health regulations require. For example, the turbidity, or clarity of filtered water is required to be less than 0.3 units 95 percent of the time. The turbidity of the water produced at each treatment plant was less than 0.10 units 90 percent of the time and less than 0.22 units 100% of the time.

What happens to the water after treatment?

Water treated at the Hemlock Filtration Plant flows to the city completely by gravity through three, 100-year-old pipelines. Along the way, some water is sold wholesale to

water districts in the towns of Livonia, Lima, and North Bloomfield. It is also sold to the MCWA, who in turn supply it to several Monroe County communities including Honeoye Falls/Mendon, Rush, Henrietta, and Brighton. The treated water makes its way to open storage reservoirs in the Town of Rush, holding 63 million gallons (MG), at Cobb's Hill containing 144 MG, and in Highland Park with 26 MG. Water is re-disinfected with chlorine as it exits each reservoir.

The City's Water Distribution System... by the Numbers

600	Number of miles of piping in the City's water distribution system.
7,200	Number of fire hydrants checked and, if necessary, repaired in the last year.
115	Number of miles of water mains cleaned last year.
2,055	Number of backflow protection devices tested last year.
250,000	Number of meter readings taken last year.

From the storage reservoirs, water enters a complex grid of water mains known as the distribution system.

Lake Ontario water purchased from MCWA is introduced to the distribution system primarily in the area of Mt. Read Blvd. and West Ridge Rd. The amount of water the City purchases varies from 0–30 million gallons per day (MGD), depending on the season. This variability means that some areas of the City may receive either Hemlock or Lake Ontario water or a mixture of both, depending on the season and the current level of demand. The water distribution maps at the right illustrate the distribution pattern of the two sources of water during typical summer and winter conditions.

Is the water system being modernized?

Modernization is a major component of our annual work effort. Many of the system's pipes are quite old. We must make significant annual capital investments in rehabilitation and replacement in order to ensure the system's reliability. Last year we spent nearly $1 million replacing more than 7,000 feet of old water mains. A similar amount was spent rehabilitating about four miles of corroded pipe, and $360,000 was invested in a system designed to protect some of our largest pipes from corrosion.

Is there enough water available to meet demand?

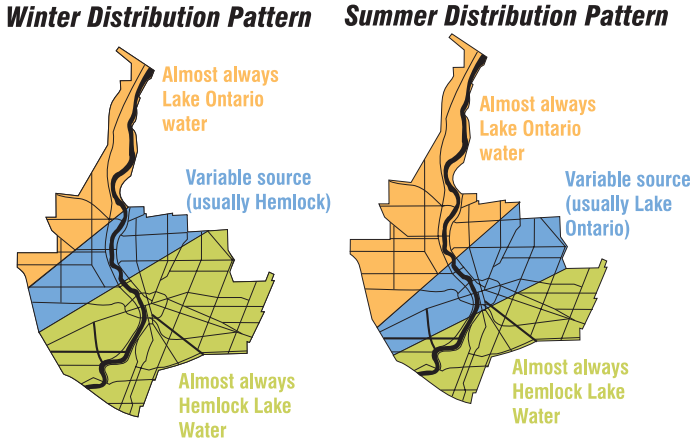
Although our region is blessed with an abundant supply of affordable, high-quality water, it is always advisable to use water responsibly. Conservation not only lowers your water bill, it helps save the environment by reducing demand on electrical and wastewater utilities.

Four Simple Conservation Steps

- Fix leaky toilets and faucets promptly.
- Replace old fixtures with newer, more efficient designs.
- Water lawns and fill pools in the evening or early morning hours.
- Don't let hoses or faucets run unattended.

Can I visit the Hemlock Water Filtration Plant and the Hemlock/Canadice Lakes Watershed?

Thousands of people visit the watershed each year to enjoy activities such as hiking, fishing, hunting, boating, and bird watching. Since the Hemlock/Canadice Lakes Watershed is the primary source of drinking water for Rochester and several other communities, a permit is required to visit City



watershed property. You can obtain a free visitor's permit at the selfserve permit station located on Rix Hill Rd. just off Rt. 15A in Hemlock, It is also available online at www.cityofrochester.gov/watershedpermit.htm, or by mailing a self-addressed, stamped envelope to: Hemlock Filtration Plant, 7412 Rix Hill Rd. Hemlock, NY 14466. Find more information by doing a search for *watershed* on the City's website.

Tours of the Hemlock Water Filtration Plant are available by appointment and can be scheduled by calling 428-6680.

How do contaminants get into the water?

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and underground aquifers. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals, and in some cases radioactive material. It can also pick up contaminants that result from the presence of animals and from human activities. These contaminants may include: microbes, inorganic and organic chemical compounds including pesticides and herbicides, and radioactive substances.

Who regulates drinking water quality?

In order to ensure that tap water is safe to drink, New York State and the EPA prescribe regulations that limit the amount of certain contaminants that can be present in water provided by public water systems as well as in bottled waters. A complex web of federal and state drinking water regulations control how we monitor, test, and report data. The Monroe County Health Department helps enforce these regulations.

Did Rochester comply with all the quality standards?

Yes. The many thousands of quality tests performed on your drinking water last year showed that it was considerably better than the standards require.

Did Rochester also comply with the monitoring, testing, and reporting requirements?

We did comply with all testing and reporting requirements, but in June we did have one instance of failure to meet a sampling requirement. We are required to monitor (sample) your drinking water for specific contaminants on a regular basis. Results of this regular monitoring are an indicator of whether or not our water meets health standards. We perform one type of required test for coliform bacteria about 150 times a month. Health regulations allow up to 5% of these tests to be positive, but each positive test must be followed within 24 hours by three "repeat samples" collected in the same vicinity as the positive sample. In the case noted, we failed to collect the repeat samples, and consequently could not determine whether the original positive sample indicated a localized water problem or a sampling or testing error. All other 154 June samples tested negative, including samples taken at other locations on the day of the positive result and those taken at the site in question several days after the incident. We are, therefore, confident that the quality in the system as a whole was acceptable throughout the month.

What other kinds of tests were performed?

More than 90 types of regulated biologic agent and chemical compounds were tested. Samples were collected from all stages of the system, including the source (streams and lakes), various steps in the treatment process, the storage reservoirs, and from the customer's tap. The data tables in this brochure list only those substances that were detected. A complete list of all substances tested can be obtained by doing a search for ***water quality data*** on the City's web site ***cityofrochester.gov*** or by calling our laboratory at **428-6680**.

Interesting Water System Facts

Statistics	2001	2002
Average Daily Production (MG)	34.5	29.1
Average Daily City Consumption (MG)	31.1	31.7
Average Daily Wholesale Sales (MG)	16.9	14.5
Average Daily Wholesale Purchase (MG)	13.2	17.0
Average Daily Lost Water (MG)	3.80	2.3
Cost ($/1000 gals for 1st 20,000 gals)	2.14	2.14
Population Served	219,000	219,000
Number of Retail Accounts	61408	61,149

Table Notes:

Lost water is that portion of water put into the system that cannot be accounted for by metered sales or other permitted uses. MG=Millions of gallons

What are Cryptosporidium *and* Giardia *and were they found in our water?*

Cryptosporidium and *Giardia* are pathogenic protozoans found in many lakes and streams. They enter the water through wastes of infected animals and humans. If ingested in sufficient quantities, these organisms can cause intestinal illness, with mild to severe, and sometimes chronic diarrhea. We have tested for both organisms in our raw (untreated) water since the 1980s, even though requlations did not yet require this. Of the four quarterly tests performed last year, all were negative for *Cryptosporidium* and one was positive at a low level for *Giardia*.

Do I need to be concerned about Giardia *in untreated water?*

The low level of *Giardia* that was detected should not be a health concern to most people, especially since this organism is quite effectively removed and/or inactivated through the filtration and disinfection processes. However, it is generally recommended that immunocompromised individulals consider taking special precautions even when there is no evidence of *Giardia* or *Cryptosporidium* in the water. Persons undergoing chemotheraphy, persons who have undergone organ transplants, people with HIV/AIDS or other immune disorders, infirm elderly, and those caring for infants should seek advice from their health care provider about their drinking water. The EPA/Center for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium, Giardia*, and other microbial pathogens are available from the EPA Safe Drinking Water Hotline **1-800-426-4791**.

Should I be concerned about the presence of chemical contaminants in my water?

We have found no chemical contaminants in our water in levels that raise concern. All drinking water, including bottled water, contains at least small amounts of contaminants. The mere presence of contaminants does not necessarily indicate that water poses a heath risk. Substances such as chlorine and fluoride are added to the water supply for health reasons. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline at **1-800-426-4791.**

Is lead present in my drinking water?

Lead is not present in detectable levels in untreated Hemlock Lake or Lake Ontario water. Minute quantities of lead can dissolve into your tap water after prolonged contact with lead-bearing pipes and plumbing fixtures. Our studies show that at-the-tap lead levels in the vast majority of Rochester households are well below allowed limits. Customers can further reduce exposure to lead by allowing the tap to run for a minute or two before use whenever the water has not been turned on for several hours.

Why does my water sometimes taste like chlorine?

Health regulations require water suppliers to add chlorine to drinking water to help protect against dangerous microorganisms. Chlorine levels are carefully controlled to ensure compliance with the regulations. If you find the chlorine taste unpleasant, try filling a container with water and keeping it loosely capped in the refrigerator. The chlorine flavor will dissipate within a few hours.

Do I need a water softener, or any other type of in-home treatment unit?

As a City water customer, you need not consider any type of in-home water treatment units unless you have a special desire or circumstantial need. The hardness level of City water is generally considered to be low enough to not require softening. Persons on low-sodium diets should also be aware that many softening units replace natural hardness minerals (mostly calcium and magnesium) with sodium.

Other types of whole-house and at-the-tap treatment units can be quite effective at removing certain chemical and biological contaminants from water. However, like softeners, these can be expensive to install and maintain, so unless a need is demonstrated, their use may not be justified. Be aware that, if not maintained properly, some units can produce water of poorer quality than that which flows directly from the tap.

If you are thinking about an in-home treatment unit, we would be glad to discuss your concerns before your purchase. (428-6680). If you do decide to purchase, buy from a reputable dealer and maintain the unit according to the manufacturer's directions.

Detected levels of all substances were well below allowed limits. These test results are mostly for regulated substances detected in the water. A complete list of results for all substances tested in 2002 is available on the City's website ***www.cityofrochester.gov*** (search for *water quality*) or by calling **428-6680**.

Inorganics and Radiologicals

The following substances were detected in water collected at the treatment plant and/or from the water distribution system (customer tap). Not all of these substances are harmful, and in fact, some are purposely added during the treatment process for their health benefit. The substances that are regulated because of health concerns are printed in blue. Data are also included for certain unregulated substances that are often of interest.

Substance	Units	MCLG	MCL	Hemlock Average (Range)	Ontario Average (Range)	Tested at	Likely Source	Meets EPA Standards
Arsenic	µg/L	NS	10	ND	(ND-1)	WTP	Erosion of natural deposits	YES
Barium	mg/L	2	2	0.016	(0.022-0.023)	WTP	Erosion of natural deposits	YES
Chlorine (entry point)	mg/L	NS	4	0.9 (0.2-1.2)	1.23 (0.87-1.7)	WTP	Disinfectant additive	YES
Chlorine (at-the-tap)	mg/L	NS	NS	0.68 (0-1.7)	NA	DS	Disinfectant additive	YES
Fluoride (entry point)	mg/L	NS	2.2	0.87 (0.6-1.2)	(0.2-1.4)	WTP	Water treatment additive to promote dental health	YES
Gross Beta (2001 data)	pCi/L	0	50	2.9(±2.5)	ND	WTP	Erosion of natural deposits	YES
Nitrate	mg/L	10	10	0.07 (ND-0.18)	(0.3-0.4)	WTP	Fertilizers; erosion of natural deposits; septic tank leachate	YES
Chloride	mg/L	NS	250	(26-27)	(21-22)	WTP	Natural deposits; road salt	YES
Color	color units	NS	15	(2.5-5)	(ND-5)	WTP	Naturally occuring	YES
Hardness (as $CaCO_3$)	mg/L grains	NS	NS	84 5	125 7	WTP	Erosion of natural mineral deposits	NA
Sodium	mg/L	NS	NS	14	11	WTP	Natural deposits; road salt; water treatment chemical component	NA
Sulfate	mg/L	NS	250	(20-21)	(27-30)	WTP	Natural deposits	YES

Turbidity

This is a measure of the clarity of water and it is a key parameter for judging the effectiveness of water filtration. Regulatory compliance is based on "entry point" samples taken at the water treatment plant.

Substance	Units	Regulatory Limit	Hemlock		Ontario		Likely Source	Meets EPA Standards
			Average	Compliance (Range)	Average (Range)	Compliance		
Turbidity (entry point)	NTU	TT=95% of samples must be <0.5 NTU	0.08 (0.22)	100%	0.07 (0.23)	100%	Erosion of soils through runoff, algae	YES
Turbidity (at-the-tap)	NTU	Avg.<5 NTU	0.17 (3.3)	NA	NA	NA	Algae, corrosion of pipes	YES

Organic Compounds

Organic, or carbon containing compounds, can be simple or very complex in form. They can be found in water in many natural forms, as well as residues of a wide array of man-made (synthetic) chemicals such as pesticides, solvents, and petroleum products. Thanks to the high quality of our source waters, the levels of most synthetic organic substances in Rochester's drinking water are too low to measure. However, several organic compounds known as disinfection byproducts (DBP's) are commonly found at low levels. DBP's form when natural organic substances react with the disinfectants added during water treatment. Health regulations limit the levels of many synthetic and DBP compounds that can be present in your water. DBP's were well below current and proposed future levels. A complete list of test results for organic contaminants can be found on the City website **(www.cityofrochester.gov)**.

Substance	Units	MCLG	MCL	Hemlock Average (range)	Ontario Average (range)	Likely Source	Meets EPA Standards
Total Trihalomethane	µg/L	NS	80	30 (9-47)	35 (16-66)	Byproduct of water chlorination	YES
Haloacetic acids	µg/L	NS	60	28 (8-51)	12 (4-22)	Byproduct of water chlorination	YES
Haloacetonitriles*	µg/L	NS	50	3.9 (1.5-5.3)	4.4 (3.4-5.5)	Byproduct of water chlorination	YES
Haloketones*	µg/L	NS	50	4.5 (1.2-7.6)	1.8 (0.9-3.4)	Byproduct of water chlorination	YES
Chloropicrin*	µg/L	NS	NS	0.5 (ND-0.8)	ND	Byproduct of water chlorination	YES
Chloral hydrate*	µg/L	NS	NS	8.5 (1.6-13)	4.6 (1.6-12)	Byproduct of water chlorination	YES
Total Organic Halides*	µg/L	NS	NS	245 (110-350)	101 (54-158)	Byproduct of water chlorination	YES

** testing done in 1998*

Bacteria and Protozoa

The primary test was for Total Coliform bacteria, a group of bacteria used to indicate the general sanitary conditions in a water system. Most species of this group do not present a health concern, but one species, *E. coli,* can be pathogenic and its confirmed presence is taken seriously. In 1993, the State Health Department granted the City a "biofilm variance," or exception to the Total Coliform MCL. Biofilm is a layer of bacteria that can be found on almost all surfaces, including the inside walls of water pipes. A biofilm variance is only granted where it is shown through testing that the species of coliform bacteria recovered from the water system are harmless environmental strains originating from the pipeline biofilm. The variance does not apply to *E. coli*, or any situation where there is evidence of some external source of contamination. *Cryptosporidium* and *Giardia* are pathogenic protozoans that can cause a form of gastro-intestinal illness that can be a serious health concern for some persons with weak or damaged immune systems.

Organism	Units	MCLG	MCL	Hemlock Highest presence (avg. presence)	Ontario Highest presence (avg. presence)	Tested at	Likely Source	Meets EPA Standards
Total Coliform bacteria	% monthly presence	0	Violation if present in more than 5% of monthly samples	2.2 (0.4)	NA	DS	Naturally present in soils and in wastes of warm blooded animals	YES
***E. coli* bacteria**	presence	0	Violation upon any confirmed presence	ND	NA	DS	Wastes of warm blooded animals and humans	YES
Cryptosporidium sp.	#/10 L	NS	NS	ND	ND	WTP Raw	Wastes of infected animals and humans	NA
Giardia sp.	#/10 L	NS	NS	1	ND	WTP Raw	Wastes of infected animals and humans	NA

Copper and Lead

Minute quantities of these substances can be dissolved in the water as it passes through pipes and/or plumbing fixtures. In Rochester households, at-the-tap levels of both substances are typically well below allowed limits.

Substance	Units	Regulatory Goal (ALG)	Regulatory Limit (AL)	Distribution Households		Likely Source	Meets EPA Standard
				90% of samples had levels below	% of samples above AL		
Copper	mg/L	1.3	1.3	0.18	0	Corrosion of pipes & plumbing fixtures	YES
Lead	ug/L	0	15	6	0	Corrosion of pipes & plumbing fixtures	YES

** data from 2000*

Definitions of Terms

The following definitions apply to water quality terms used in this brochure.

µg/L – *Micrograms per liter*–same as parts per billion (PPB); corresponds to one ounce in 7,812,500 gallons of water.

L – *Action Level*–the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. For example, special treatment requirements kick-in if lead levels are not below 15 µg/L at 90% or more of sites tested.

ALG – *Action Limit Goal*–the level of a contaminant in water below which there is no known or expected health risk, with allowance for a margin of safety.

aquifers – underground source of water

at-the-tap–distribution system sampling location(s) such as a customer's household tap

DS – Distribution System

Entry point–point at which water is introduced to the system following treatment. Identified for regulatory compliance purposes.

L – *Liter*–volume of water slightly larger than a quart

MCL – *Maximum Contaminant Level*–the highest level of a contaminant allowable in drinking water. MCLs are set as close to the MCLGs as feasible.

MCLG – *Maximum Contaminant Level Goal*–the level of a contaminant in drinking water below which there is no known or expected health risk, with allowance for a margin of safety.

mg/L – *Milligrams per liter*–same as parts per million (PPM); corresponds to one ounce in 7,812.5 gallons of water.

ND – *Not-Detected*–laboratory analysis indicates that the constituent is not present.

NS – *No Standard*–no regulatory standard (MCL or MCLG) in effect.

NA – *Not Applicable*

NTU – *Nephelometric Turbidity Unit*–a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L – *Picocuries per liter*–A measure of the radioactivity of water.

Pathogenic – capable of causing disease

Protozoan – a common type of single-celled microbe, sometimes parasitic

RAW – Untreated water

TT – *Treatment Technique*–a required process intended to reduce the level of a contaminant in drinking water.

WTP – *Water treatment plant*

Consult these resources for more information.

- City water quality: Hemlock Filtration Plant–428-6680.
- City water billing/24-hour customer service: 428-7095. Water system in general: **www.cityofrochester.gov**.
- State and local health regulations: Monroe County Department of Health–274-6057.
- Monroe County Water Authority: **www.MCWA.com**
- Federal regulations and general info: EPA Hotline– **1-800-426-4791**, or **www.epa.gov/ogwdw/**
- Cryptosporidium and other waterborne diseases: Center for Disease Control website– **www.cdc.gov/ncidod/diseases/**
- Point-of-use water treatment devices: National Sanitation Foundation– **www.nsfconsumer.org/water/dw_treatment.asp**

City of Rochester, New York
Hemlock Filtration Plant
7412 Rix Hill Rd.
Hemlock, NY 14466

Working Together to Protect
PARTNERSHIP FOR SAFE WATER
America's Drinking Water

Rochester, NY All-America City 1998

ROCHESTER 2010 THE RENAISSANCE
City of Rochester, New York
William A. Johnson Jr., Mayor